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anatomy of the shining bodies in Porichthys. He concludes that these are true phosphorescent organs.

Thus far no specimens have been found to be luminous in the aquarium, and light has not been developed through electric stimulation, or by excitement through ammonia.

D. S. J.

**Absence of Retinal Pigment in the Dogfish.**—In his study of the retina of the common dogfish (*Mustelus vulgaris*) Schaper<sup>1</sup> has made the noteworthy observation that the retinal pigment cells, which in most vertebrates are loaded with dark pigment granules, are in this animal absolutely devoid of such particles.

P.

**Pupa-Grafting in Moths.**—The method of grafting young animals, as devised by Born for tadpoles, has been applied by Crampton<sup>2</sup> to the pupæ of moths. An injured pupa at best regenerates sufficient integument to cover the wound. Parts of two longitudinally split pupæ joined in natural proportions failed to unite, but anterior and posterior portions cut at any level united. Compounds slightly smaller than normal or enlarged by the insertion of a ring failed to coalesce. Fragments grafted on whole pupæ formed exactly those portions they would have formed had they remained on the original pupa. Pupæ are easily united sidewise or endwise, but in these, as in all other cases, the union is that of the integument and superficial parts only. The results of these experiments on the colors of different species are especially interesting. When individuals of two species having different colors were united so that their hæmolympths mingled, the outcome was almost always a double animal whose colors were normal. The same result was obtained from united males and females in species with differently colored sexes. The colors are probably produced, as a rule, through the action on the hæmolympth of a localized internal factor such as the "ferment" cytoplasm assumed by Mayer.

P.

**Amitotic Followed by Mitotic Cell Division.**—The observations of Gerassimoff, that cooling would convert the mitotic division of Spirogyra cells into amitotic, and of Pfeffer and Nathanson, that a

<sup>1</sup> Schaper, A. Die nervösen Elemente der Selachier-Retina in Methylenblaupräparaten, *Festschrift zum siebenzigsten Geburtstag von Carl von Kupffer*, 10 pp., 3 Taf. Jena, 1899.

<sup>2</sup> Crampton, H. E. An Experimental Study upon Lepidoptera, *Archiv für Entw.-mech.*, Bd. ix, pp. 293-318, Pls. XI-XIII, 1899.